CHAPTER 5

CUMULATIVE IMPACTS

TABLE OF CONTENTS

LIST OF FIGURES

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CHAPTER 5 CUMULATIVE EFFECTS

Cumulative effects are those impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions on the Cumulative Effects Areas (CEAs). They can result from individually minor, but collectively significant actions taken over a period of time. Major past and present land uses in the area, which are also projected to continue into the future include: mining, roads/trails, timber harvesting, wildfires, Tribal Treaty Rights, livestock grazing, and agriculture. Dispersed recreation (including hunting and fishing) and residential development also occur in parts of the CEAs.

The configuration of the Proposed Action and Action Alternatives in relation to the previous Panels F and G project analyzed in the 2007 FEIS provided the foundation for identifying CEAs. The CEA boundaries defined for the 2007 FEIS would apply in most cases to the Proposed Action and Action Alternatives because (1) the Proposed Action and Action Alternatives are fully contained within each of the 2007 FEIS CEAs, and (2) the Proposed Action and Action Alternatives are inextricably linked to the approved mining of Panels F and G. As such, those CEA boundaries will be used for this current Project for all resources except groundwater and surface water because smaller CEAs are specifically more applicable to this Project.

The cumulative effects analysis prepared for Chapter 5 of the 2007 FEIS was extensive and very detailed. The current Proposed Action or Alternative 1 would increase the Panels F and G disturbance by a maximum of approximately 170 acres (125 acres under Alternative 2), which is an increase of less than one percent in all of the CEAs. Furthermore, all proposed disturbance is either immediately adjacent to or within approved mining disturbance. Impacts from the Proposed Action or Action Alternatives, as analyzed in **Chapter 4**, would be negligible for most resources; therefore, adding the Proposed Action or one of the Action Alternatives to the past, present, and reasonably foreseeable actions within the CEAs would result in similar cumulative impacts to those thoroughly described in the 2007 FEIS.

As stated in **Chapter 1**, this EIS tiers to the 2007 FEIS and uses as much information as possible from that document as is applicable to this proposed Project. A CD version of the 2007 FEIS has been included as part of this EIS for ease of reference. Much of Chapter 5 of the 2007 FEIS provides general information about past and present projects, actions, and disturbances within the CEAs. That information is generally not repeated in the following sections. Rather, where specific sections of **Chapter 5** are tiered to the 2007 FEIS, the text is either incorporated by reference or briefly summarized, and followed by any specific Project-related information. Some reasonably foreseeable projects in the 2007 FEIS are now considered past or present.

Because the direct and indirect impacts specifically from the Project are expected to have negligible to minor overall impacts, the overall cumulative impacts to most resources are expected to be essentially identical to those already described in the 2007 FEIS. Thus the following resource sections typically present and describe only new information not reported in the 2007 FEIS.

5.1 GEOLOGY, MINERALS, TOPOGRAPHY, AND PALEONTOLOGY

5.1.1 CEA Boundary

The CEA boundary for geology, minerals, topography, and paleontology (**Figure 5.1-1**), and the rationale for it, is the same as for the 2007 FEIS which was delineated to include the southeastern Idaho phosphate mining district, including Known Phosphate Lease Areas (KPLAs) in Bear Lake and Caribou Counties, Idaho. This is an area of 789 square miles (504,960 acres) within which there are current leases for 38,874 acres or 7.7 percent of the total CEA area. **Figure 5.1-1** shows locations of KPLAs, phosphate mine leases, and past, present, and reasonably foreseeable future phosphate mines in Bear Lake and Caribou Counties, Idaho; and identifies the general location of these proposed future phosphate mines.

5.1.2 Introduction

Potential effects to the geology, mineral, and topographic resources consist of mineral resource depletion, paleontological resource disturbance, topographic changes, exposure of rock bearing COPCs, and geotechnical instability. Past and present phosphate mining activities, and proposed future phosphate mining are analyzed in terms of cumulative effects to these resources.

5.1.3 Past and Present Disturbances

There are currently three active phosphate mines in the southeast Idaho phosphate mining district: Smoky Canyon, Rasmussen Ridge, and Blackfoot Bridge. All of these mines have varying degrees of areas disturbed and areas reclaimed, As of January 2010, there were approximately 12,000 disturbed acres from active and inactive mines (BLM 2011), which includes 2,437 acres of past disturbance at Smoky Canyon Mine.

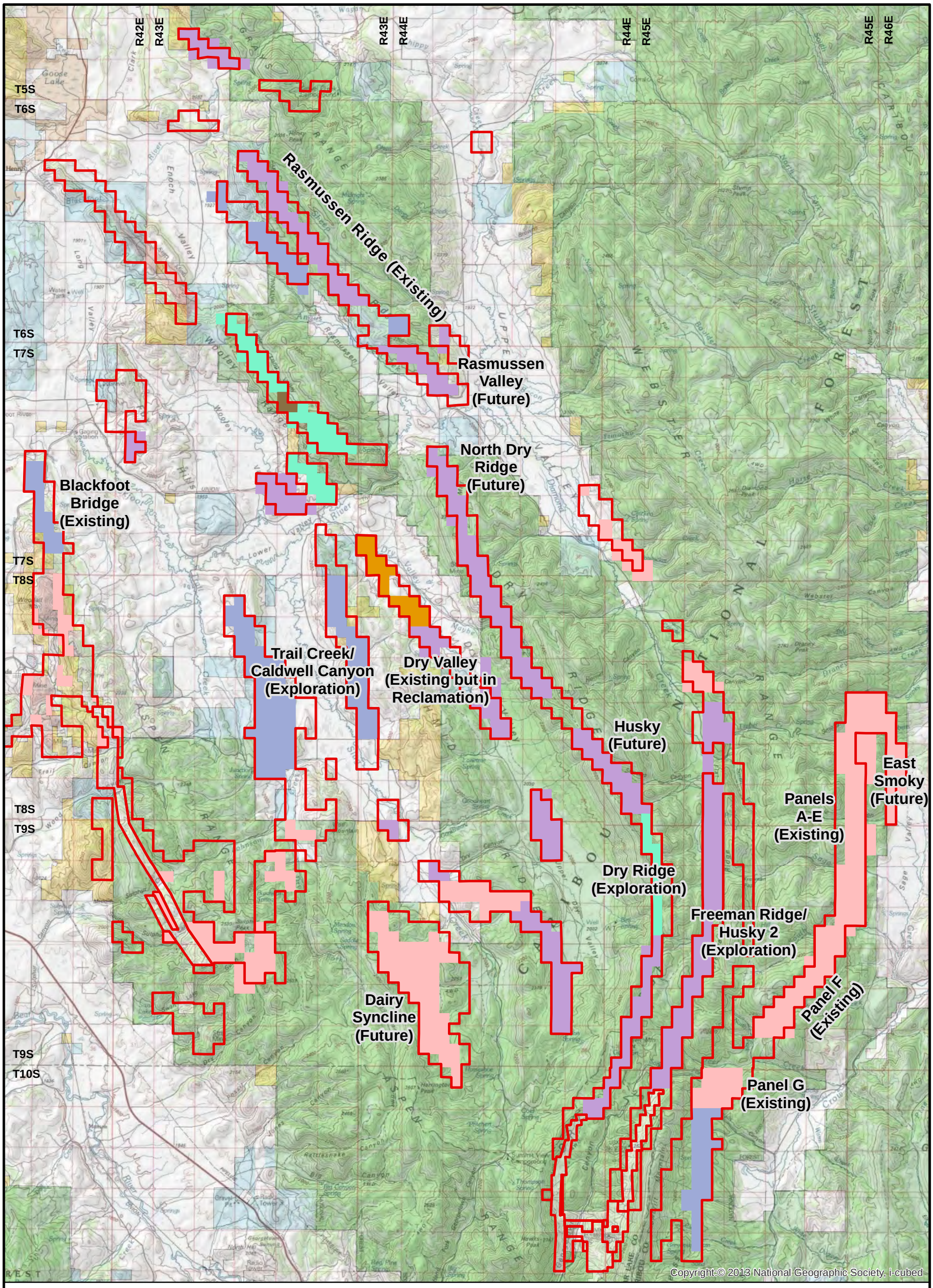
Since the 2007 FEIS and 2008 RODs, mining of Panels F and G has been approved and initiated by mining activities started in 2008 for Panel F, and development of the haul road to Panel G. This approved continuation of mining at the Smoky Canyon Mine will result in approximately 1,449 acres of presently approved disturbance (for a total of 3,886 acres of past, present, and presently approved disturbance at Smoky Canyon Mine). Other mining activities that have been approved since the 2007 FEIS include the Blackfoot Bridge Project (approved in 2011), estimated to result in approximately 686 acres of total disturbance.

Phosphate exploration activity that has occurred within the CEA since 2007 includes drilling at Husky/North Dry Ridge, Dairy Syncline, and Rasmussen Valley.

Based solely upon the information presented previously, past and present disturbances strictly from phosphate mining activities within the CEA total approximately 14,140 acres.

Within the CEA, other major earth-moving activities include construction of roads, railways, dams, and aggregate pits. These features primarily impact topographic resources, with lesser influences on geologic, mineral, and paleontological resources. The impact of aggregate pits on geologic resources is negligible in comparison to phosphate mining.

Document Path: X:\ID\Clients\JR_Simplot\PanenG_LeaseMod_ExpansionConveyorProject\MXDs\Figures\Chapter 5\Figure 5.1-1 Southeast Idaho Phosphate District.mxd



Explanation

- Known Phosphate Lease Areas (KPLAs)

Phosphate Lease Owners

- FMC; Rhodia Inc.
- FMC
- Agrium
- Monsanto
- Rhodia Inc.
- JR Simplot Co.

Land Ownership

- BLM
- BIA
- Private
- State
- USFS

N

12,000 0 12,000 Feet

Figure 5.1-1
Southeast Idaho Phosphate District
Panel F & G Lease/Mine Plan Modifications EIS

There is no known past oil or gas production in the CEA. Although exploration wells have been drilled in the recent past, no commercial production has been established. Hard-rock mineral and metals mines operate in Idaho but not within the CEA, although some gold prospecting does occur (Gillerman and Bennett 2007).

5.1.4 Foreseeable Future Disturbances

Ongoing and future phosphate mining is expected to be the most prominent foreseeable cause of future disturbances within the CEA. World consumption of phosphate fertilizer is projected to increase from 41.9 million tons in 2012 to 45.3 million tons in 2016 (USGS 2013) and at least four new phosphate mines have been proposed within the CEA. These include the Dairy Syncline Mine (approximately 2,142 acres), the Rasmussen Valley Mine (approximately 420 acres), the Husky/North Dry Ridge Mine (approximately 1,051 acres), and the East Smoky Project (approximately 847 acres) at the Smoky Canyon Mine. These proposed new mines would result in approximately 4,460 acres of additional disturbance, the majority of which would be reclaimed.

Additional phosphate exploration drilling within the CEA has also been proposed outside of the new mine areas listed above and includes: Dry Ridge (approximately 69 acres), Trail Creek/Caldwell Canyon (approximately 60 acres), and Freeman Ridge/Husky 2 (approximately 168 acres).

The reasonably foreseeable disturbance expected from phosphate exploration and mining activities in the CEA is approximately 4,690 acres, plus an additional unknown amount of disturbance resulting from the Dry Ridge exploration project.

Future oil/gas exploration and possibly production could occur in the CEA, but would have minimal effect on geology and topographic resources. If there were any proposed future oil/gas disturbance it would be analyzed under a separate NEPA analysis process. Mineral resource development of oil/gas would not likely affect phosphate mining and future phosphate mining would have no effect on oil/gas resources in the area.

5.1.5 Cumulative Disturbances

The Proposed Action or Alternative 1 (170 acres, or 125 acres under Alternative 2), when combined with past and present disturbance (approximately 14,140 acres), and foreseeable future disturbance (4,690 acres), totals about 19,000 acres of disturbance in the CEA. The cumulative effect of phosphate mining disturbance from past, present, and foreseeable future activities (18,830 acres) would be approximately 3.7 percent of the CEA. The disturbance of the Proposed Action or Action Alternatives would increase this total to about 19,000 acres, or by 0.03 percent.

As summarized from Blackfoot Bridge FEIS (BLM 2011), if all KPLAs within the CEA are developed to the extent that 90 percent of each federal phosphate lease is disturbed through excavation, construction, or other ancillary activities, approximately 39,300 acres (8.8 percent of the CEA) would be disturbed at some point. The volumetric equivalent of geological, mineral, and paleontological resources that would be disturbed is uncertain because each mine would design mine plans according to geologic and market constraints unique to each phosphate lease.

5.1.6 Cumulative Effects

The cumulative result of this action when combined with other past, present, and foreseeable future disturbances in the CEA would be a total of approximately 19,000 acres for which there is a residual change in topography following mineral development. This would be approximately 3.7 percent of the CEA. All other cumulative effects to geology, minerals, topography, and paleontological resources described in the 2007 FEIS would be similar and are not repeated in this section.

Regarding selenium mobilization within the CEA, this is most affected by disturbance of selenium-containing bedrock or soil. Phosphate mining activities impact these resources and can result in release of selenium and trace metals to the environment. Most other ground-disturbing activities within the CEA such as road/highway construction and maintenance, building construction, ditch construction, and agricultural practices typically do not disturb bedrock. The effects of selenium mobilization on water resources are thoroughly discussed in Sections 3.3 and 4.3 of the 2007 FEIS.

The Proposed Action and Action Alternatives include the construction of a GCLL, as opposed to the currently approved geologic store and release cover, over either approximately 400 acres (Proposed Action) or approximately 140 acres (Action Alternatives) of seleniferous overburden at Panel G. Based upon lower percolation rates due to the GCLL, this is anticipated to reduce the overall predicted loading of selenium and potentially other COPCs to Deer Creek, Books Spring, and Crow Creek from the Panel G area. This, in turn, is expected to decrease the overall cumulative effects of COPC loading in this area of the CEA. Thus, the area of the Proposed Action or Action Alternatives is not expected to be additive to the existing mining disturbances in the CEA in a cumulative manner with regard to exposure of seleniferous overburden.

5.2 AIR, CLIMATE CHANGE, AND NOISE

5.2.1 CEA Boundary

The CEA boundary (Figure 5.2-1 in the 2007 FEIS) for air resources, climate change, and noise resources, and the rationale for it, is the same as in the 2007 FEIS. It generally includes all the past, present, and reasonably foreseeable Smoky Canyon Mine operations, and the Wells Canyon lease area. Although the Wells Canyon lease is adjacent to Panels F and G, the Agencies have no reason to assume it will be mined in the foreseeable future. Monsanto owns this lease and Simplot has conducted phosphate resource exploration on the lease under agreement with Monsanto. At the time this cumulative impacts analysis was conducted, Monsanto had not proposed mining of the lease; Simplot had not purchased the mining rights for the lease, nor proposed to mine it. The CEA also includes the area along the Crow Creek, Wells Canyon, and Diamond Creek roads that are near or adjacent to the Smoky Canyon Mine. Seasonal residents along the Crow Creek road are the closest known sensitive receptors within the CEA.

5.2.2 Air Resources

5.2.2.1 Introduction

Air quality in the CNF can occasionally be adversely affected by pollutants from sources outside the CNF. These effects typically occur during winter inversions or when stable air masses occur

under static, high-pressure weather systems. Typical pollution sources outside the CNF may include power plants, factories, agricultural burning, auto emissions, and smoke from wildfires (USFS 2003b).. Cumulative effects to air quality in the CEA from past, present, and foreseeable future activities are largely from dust released by agricultural practices, mining, travel on unpaved roads, and smoke from wildfires or prescribed burns. Grazing and timber harvesting can produce fugitive dust, but the quantities are minimal and are expected to remain approximately equal to present conditions. Travel on unpaved roads in the CEA can adversely affect air quality from auto emissions, but this type of use has not adversely affected air quality measurably in the past and thus is not considered a concern (USFS 2003b).

5.2.2.2 Past and Present Disturbances

Mining is the major fugitive dust producing activity within the CEA. Fugitive dust emissions would continue with ongoing and approved mining actions at the Smoky Canyon Mine.

Including existing phosphate mining, other sources that have and are likely to contribute to particulate and gaseous emissions within the CEA are timber harvesting, agriculture, travel on paved and unpaved roads, and grazing. Wildfires are also sources that have contributed to emissions within the CEA in the past. Wildfires are short-term sources of air pollutants that can generate fine particulate matter. Smoke and gases from wildfire are a complex mixture of carbon, tars, liquids, and different gases, but the major air pollutants are PM_{10} and $PM_{2.5}$. Equipment used for fire suppression can also generate air pollutants. Wildfires generate temporary and intermittent effects on air quality in the immediate vicinity of the ignitions and could also potentially impact visibility in Class I Areas. Because conditions from wildfires are not controlled, they have the potential for greater impacts than controlled burns. Controlled burns are implemented at specific times when atmospheric conditions would allow rapid dispersal of air pollutants. Vehicle travel on paved and unpaved roads can also contribute to an adverse impact to air quality. However, this source has not adversely affected air quality measurably in the past and is not considered a concern (BLM and USFS 2007). Agricultural activity contributes to uncontrolled emission of particulate and gaseous emission on a seasonal basis.

Grazing and timber harvesting can produce fugitive dust, but the quantities are minimal and are expected to remain approximately equal to present conditions. Other past and present sources of impacts include residential and small industrial heating sources such as natural gas, oil, and wood. These sources are primarily located along Crow Creek road and the impacts are minimal and are expected to remain approximately equal to present conditions.

5.2.2.3 Foreseeable Future Disturbances

As stated in **Section 5.1.4**, the East Smoky Project (approximately 847 acres) has been proposed to occur within the CEA. Timber harvesting, agriculture, travel on paved and unpaved roads, grazing, and wildfires are also likely foreseeable future disturbances within the CEA that would continue to generate dust and exhaust emissions, along with mining and CERCLA related activities at the Smoky Canyon Mine.

5.2.2.4 Cumulative Disturbances

Wildfire emissions, when added to existing concentrations of air pollutants, could produce cumulative effects that result in non-attainment of the particulate standards in specific areas. All

prescribed fires are conducted in compliance with state regulations for protection of air quality and only when ambient air quality standards will not be exceeded. The RFP FEIS states, "Burning will be permitted only when management-caused smoke emissions combined with other residual pollutants does not create cumulative effects that could adversely affect air quality, human health, and visibility" (USFS 2003b). However, depending on the proximity of prescribed fires to the location of the Proposed Action and Action Alternatives and the prevailing wind direction, emissions from the fires could be additive to those from the ongoing mining operations at the Proposed Action or Action Alternatives location. Smoke disperses rapidly in most cases and impacts from smoke on air quality are short-lived. It is not possible to quantify these effects in this CEA due to the uncertainty of these conditions, so cumulative effects of adding the particulate emissions from the Proposed Action or Action Alternatives to potential smoke emissions from fires cannot be determined.

All past, present, and reasonably foreseeable mining in the CEA are conducted by Simplot, and the amount of air pollutants resulting from this activity is largely based on the mining rate and the truck haul distances. The Proposed Action or Action Alternatives would actually result in reduced air emissions in the CEA based upon the construction of the Panel F ore conveyor system. The conveyor would eliminate the need to haul ore from Panels F and G to the mill via haul trucks, although the haul road would remain open for vehicle and equipment use as needed. The volume of air emissions related to truck hauling would decrease when ore transport is shifted from haul trucks to the conveyor system at Panel F. The Proposed Action or Action Alternatives would comply with NAAQSs and applicable state and federal regulations on protection of air quality.

Calculations of average settling rates for dust from mining conducted for the 2007 FEIS indicated that most dust would settle to the ground within less than a mile from the dust emitting mining activity. The nearest present mining operation to Smoky Canyon Mine is the Dry Valley operation approximately 11 miles away, so there should not be a cumulative effect from dust emissions due to mining at Smoky Canyon and reclamation at the Dry Valley Mine. In addition to the dust emissions from mining, the mining equipment produces gaseous emissions of NO_x, SO_2, CO, CO_2, and VOCs. These would combine with other emissions from present and reasonably foreseeable emitting sources.

Current and future operations at the Smoky Canyon Mine are not forecasted to impact any federally designated Class I Areas (i.e., Bridger Wilderness, Grand Teton National Park, and Yellowstone National Park).

5.2.2.5 Cumulative Effects

Considering past, present, and foreseeable future disturbances to air resources combined with disturbances from the Proposed Action or Action Alternatives to these resources, cumulative effects would be short term and negligible. The Proposed Action or Action Alternatives would be expected to maintain the status of compliance with state and federal standards. Emissions from the Smoky Canyon Mine would continue as approved at Panels F and G and could also increase from future mining at the East Smoky Project area. Wildfires could add additional pollutants but cannot be predicted.

5.2.3 Climate Change

5.2.3.1 Introduction

As described in **Section 4.3** of this EIS, the combustion of diesel and gasoline contribute CO_2 to the atmosphere which in turn creates GHGs. GHGs would be generated by the Proposed Action or Action Alternatives.

5.2.3.2 Past and Present Disturbances

In addition to ongoing phosphate mining, contributions to GHG emissions within the CEA include those from local rural and community traffic, traffic through the area to recreational locations, operation of agricultural equipment, residential and small industrial heating sources, and other commercial and industrial activities. Quantitative data on these varied sources is not readily available, but their contribution in the CEA is small compared to phosphate mining activities and they are expected to remain approximately equal to present conditions.

5.2.3.3 Foreseeable Future Disturbances

Foreseeable future contributions to GHG emissions include ongoing and new phosphate mining activities at the Smoky Canyon Mine as previously described. They also include continuation of local rural and community traffic, traffic through the area and to recreational locations in the CEA, operation of agricultural equipment, residential and small industrial heating sources, and other commercial and industrial activities. Quantitative data on these varied sources not directly associated with phosphate mining is not readily available, but their contribution is small compared to phosphate mining and they are expected to remain approximately equal to present conditions.

5.2.3.4 Cumulative Effects

Past, present, and reasonably foreseeable contributions to GHG emissions in the CEA have been and would continue to be predominantly associated with phosphate mining activities. GHG emissions from the mining operations are associated with direct fuel consumption for operating equipment and machinery including haul trucks and other mining equipment, and generation of electricity consumed at the facilities.

GHGs are considered to have caused a warming trend globally and could continue to do so if atmospheric levels are not reduced. The generation of GHGs would still occur under the Proposed Action or Action Alternatives, but to a lesser degree than previously approved due to use of the Panel F ore conveyor system. Because the scale of the global warming issue is so large and the release of CO_2 from fuel consumption for both the approved and proposed operations is relatively miniscule compared to the U.S. emission rate (5.9 billion metric tons in 2005 (EIA 2006)), an assessment of the effects of the Proposed Action or Action Alternatives on global climate change would be unreliable. Impacts from GHGs may be countered locally by CO_2 sequestration in the vegetation of the adjacent CNF and added to by any future fires in the CNF; however, the RFP FEIS (USFS 2003b) cautions that estimating these effects may not be reliable. It should be noted that the amount of GHG emissions from the Proposed Action or Action Alternatives would be less than those generated under the previously approved operations for Panels F and G, so there would not be an increase in effects to global climate change.

5.2.4 Noise Resources

5.2.4.1 Introduction

Mines in the southeast Idaho phosphate mining district do not overlap within the CEA and noise impacts from these mines are not known to overlap either due to the distance and topography between the existing mines. Noise impacts from the Proposed Action or Action Alternatives do not impact sensitive receptors in the CEA beyond what is currently occurring. The effects of adding the proposed Project to the past, present, and foreseeable future disturbances to noise resources would not result in adverse cumulative impacts.

5.2.4.2 Past and Present Disturbances

Within the CEA, mining and mining-related activities are ongoing at Smoky Canyon Mine. Mining in Panel F began in 2008 and construction of the haul road to Panel G commenced in 2012. The continuation of approved mining at the Smoky Canyon Mine will result in ongoing noise. Other existing operating phosphate mines are located outside the CEA and would not impact the CEA for noise resources.

5.2.4.3 Foreseeable Future Disturbances

Foreseeable future noise disturbances within the CEA include ongoing and new phosphate mining activities at the Smoky Canyon Mine as previously described, as well as local rural and community traffic, traffic through the area and to recreational locations in the CEA, operation of agricultural equipment, and other commercial and industrial activities. Potential noise impacts from the future East Smoky Project are not expected to contribute to cumulative impacts to sensitive noise receptors within the CEA because the sensitive noise receptors along Crow Creek Road should be situated a sufficient distance away from this potential future project.

5.2.4.4 Cumulative Disturbances

Past, present, and reasonably foreseeable disturbance impacts to the CEA have been and would continue to be predominately associated with noise localized to the mining areas associated with the Smoky Canyon Mine.

5.2.4.5 Cumulative Effects

Mining-related noise within the CEA would basically be equivalent to existing conditions. However, noise impacts from mining operations at Panels F and G would be ongoing and would likely be combined with potential mining related-noise from the future East Smoky Project (situated approximately seven miles to the north), should mining operations be concurrent. Under the Proposed Action or Action Alternatives, noise from the Panel F ore conveyor system would take the place of noise from haul truck traffic between Panel F and the mill at Smoky Canyon Mine. The public driving on the road to the main Smoky Canyon Mine entrance is currently exposed to the mining and haul traffic noise and residents along Crow Creek are exposed to some noise from mining currently occurring at Panel F.

Noise impacts from the Proposed Action or Action Alternatives when added to the ongoing Smoky Canyon Mine operations would not impact sensitive receptors within the CEA above what is currently occurring.

5.3 GROUNDWATER RESOURCES

5.3.1 CEA Boundary

The CEA boundary for groundwater (**Figure 5.3-1**) encompasses the area defined by previously established natural boundaries of the groundwater that could be impacted by the proposed changes to Panel G. As determined in the 2007 FEIS, the area of influence by Panel G is confined to the vicinity of Deer Creek, Books Spring, and Crow Creek. Thus, the CEA boundary is along Crow Creek from where it is crossed by the Wells Canyon Fault downstream to the confluence with Deer Creek, upstream along Deer Creek to where it crosses the Deer Creek fault, then along the fault to the top of Freeman Ridge, south along Freeman Ridge and Snowdrift Mountain to Wells Canyon, and east along the Wells Canyon Fault to Crow Creek.

As described in **Section 4.4.2**, the proposed Panel F ore conveyor system would not have any effect on groundwater but the Panel G portion of the Proposed Action or Action Alternatives would have direct and indirect effects on groundwater. Therefore, only the effects on groundwater from Panel G need to be evaluated in cumulative effects. The description of the groundwater conditions in the vicinity of the original Panels F and G project is well documented in the 2007 FEIS. It is clear from that description that the groundwater that could be impacted by the proposed changes to Panel G is confined to the vicinity of Deer Creek, Books Spring, and Crow Creek.

The 2007 FEIS included a larger CEA due to predicted groundwater impacts in the Sage Creek drainage from Panel F. However, particle tracking done as part of the groundwater modeling for the 2007 FEIS clearly shows that groundwater under and down gradient of Panel G does not flow to the north and does not discharge at the Sage Creek drainage. Thus, this section does not evaluate any of the effects of the Smoky Canyon Mine Panels A through E or Panel F on Sage Creek. It also does not consider cumulative effects related to the tailings pond which is in a different watershed from Panel G and is not connected via groundwater to Panel G.

5.3.2 Introduction

Cumulative effects to groundwater in the CEA would include such things as groundwater withdrawals from wells or chemical effects caused by surface land uses that contribute contaminants to the groundwater under or down gradient of these land uses. Effects from timber harvesting, grazing, rights-of-way, and recreational uses on groundwater resources in the CEA are negligible. Mining activities within the CEA have the greatest potential to impact the groundwater resources by withdrawal for consumptive use or from infiltration from open pits and seepage through overburden disposal fills, which have the potential to affect groundwater quality. The only mining operations in the CEA are those of the Smoky Canyon Mine, Panel G. Under the Proposed Action or Action Alternatives, there would be no change in the mine's water supply wells or water consumption, compared to that previously analyzed in the 2007 FEIS. Similarly, other groundwater quantity impacts would not be measurably different from what was previously predicted by that analysis. Thus, cumulative effects analyzed in this section are limited to those activities that have the potential to affect groundwater quality from changes to the Panel G mine plan.

Groundwater conditions in the CEA are described in the 2007 FEIS and supplemental groundwater reports. No new groundwater modeling was conducted for this EIS. As described in

the 2007 FEIS, groundwater beneath the Panel G area has previously been interpreted to move toward the east and north toward Deer Creek, Books Spring, and Crow Creek. As described in **Section 4.3**, the RI/FS Report (Formation Environmental 2014) provides new groundwater predictions of groundwater quality to the north of the area defined here as the groundwater CEA. Some of those predictions are relevant to the surface water CEA and are discussed in **Section 5.4**.

5.3.3 Past and Present Disturbances

Mining-related selenium increases have previously been noted and studied at several monitoring wells and natural groundwater discharge locations outside the CEA. One of the primary mechanisms for these increases is thought to be due to the infiltration of seleniferous leachate from overburden fill entering the upper part of the Wells Formation aquifer. In recent years, mitigation measures such as improved cover designs for ODAs have been developed and implemented to reduce these water quality impacts to acceptable levels over time within a relatively short distance down gradient of the mining operations.

Mining of Panel G has not commenced, so no ODAs have yet been constructed. According to the 2007 FEIS, the approved geologic store and release cover for Panels F and G is designed to reduce the quantity of seleniferous leachate to an extent that applicable groundwater and surface water standards would be met at all groundwater discharge points.

5.3.4 Foreseeable Future Disturbances

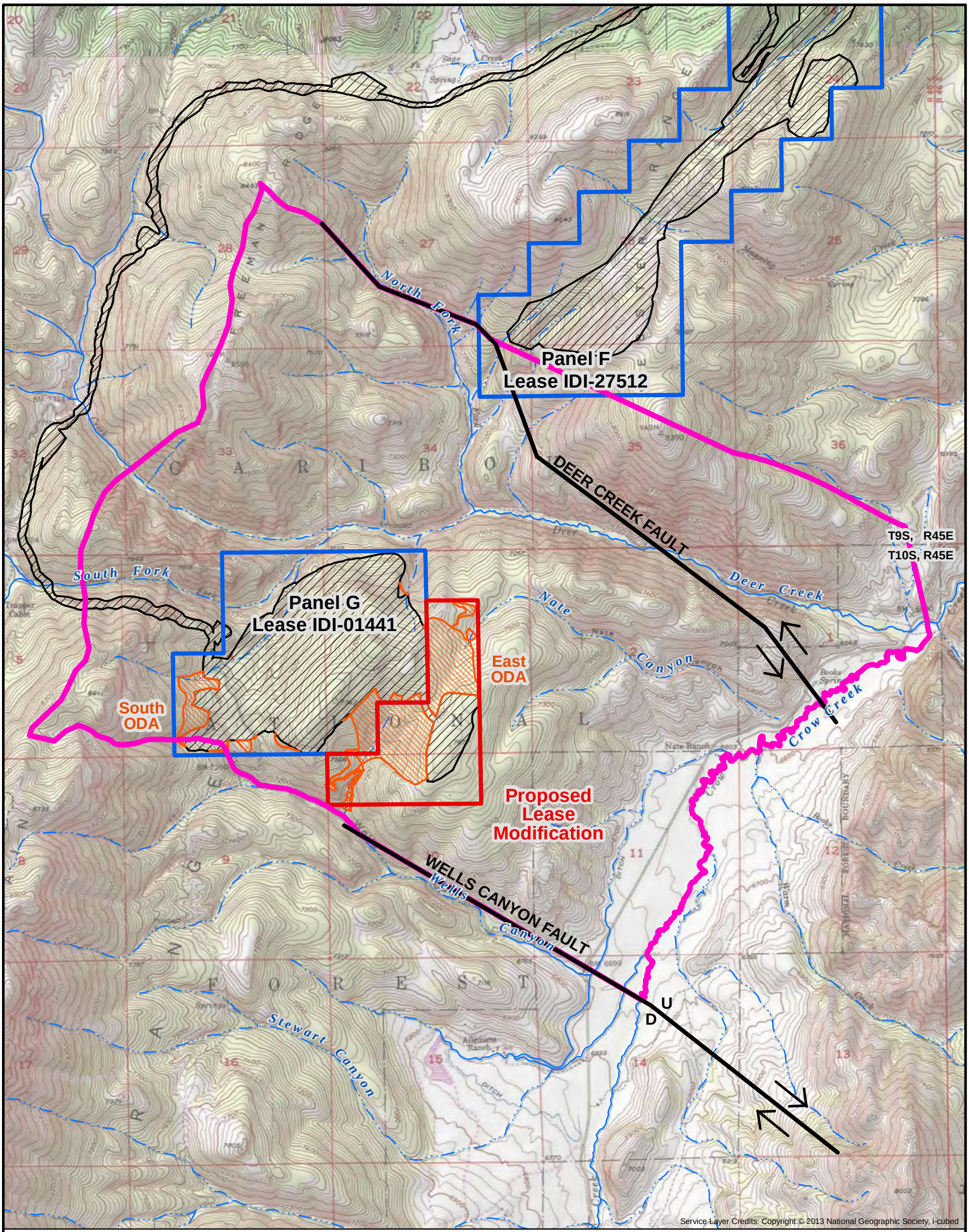
As described in **Section 4.4**, the Proposed Action or Action Alternatives, using a GCLL to cover either all or a portion of the seleniferous overburden at Panel G, would result in reduced selenium loading to groundwater compared to that modeled and approved in the 2007 FEIS. Thus, the predicted concentrations at groundwater discharge points associated with lower Deer Creek, Books Springs, and Crow Creek in that vicinity would be reduced by an equivalent proportion. The water quality at these locations would continue to meet applicable groundwater and surface water standards at all groundwater discharge points within the CEA.

5.3.5 Cumulative Disturbances

The Proposed Action or Action Alternatives would result in lessened water quality impacts to groundwater downgradient (east and north) of Panel G. As described in **Section 4.2.2**, selenium loading to the Wells Formation groundwater below and downgradient of Panel G is expected to be 56 percent, 16 percent, and 13 percent less than what was predicted for the geologic store and release cover under the Proposed Action, Alternative 1, and Alternative 2, respectively.

5.3.6 Cumulative Effects

Approved mining of Panel G was anticipated to have adverse impacts to groundwater quality in the CEA. With the Proposed Action or Action Alternatives, this impact would be replaced by a lesser amount of degradation to the same groundwater and groundwater discharge points; it would not be cumulative to it. In both cases, applicable groundwater and surface water standards would be met at all groundwater discharge points. This cumulative impact would be minor, local, and long term.



Explanation

- Cumulative Effects Boundary
- Proposed Lease Modification
- Proposed ODA Expansions and Stormwater Features Disturbance
- Approved Panel G and Haul Road Disturbance
- Panels F & G Lease Boundaries

Streams

- Intermittent Stream
- Perennial Stream

Faults

- Normal Fault (D=downthrown; U=upthrown)

N

2,500 0 2,500 Feet

Figure 5.3-1
Cumulative Effects Area for Groundwater Resources
Panel F & G Lease/Mine Plan Modifications EIS

5.4 SURFACE WATER RESOURCES

5.4.1 CEA Boundary

The CEA boundary for surface water (**Figure 5.4-1**) is the Crow Creek watershed (HUC 5) to its confluence with the Salt River. This is a natural boundary because the effects of the Proposed Action or Action Alternatives on surface waters would be well encompassed by this boundary and would not be expected to extend to other watersheds. As flows progress downstream, localized effects would become more and more diluted and eventually reach a point where effects become non-measurable.

5.4.2 Introduction

Potential cumulative effects to surface water resources within the CEA can occur from road construction and maintenance, livestock grazing, timber harvesting, agricultural activities, and mining. Forest management activities including timber harvests, livestock grazing, and public recreational uses occur within the CNF located on the east and west slopes of the Crow Creek watershed upstream (south) of its confluence with Sage Creek. In Wyoming, the Bridger-Teton National Forest holdings comprise most of the Spring Creek watershed which drains into Crow Creek about five miles upstream of the Salt River.

The existing Smoky Canyon access road, mill, offices, maintenance facilities, tailings pond, and mine Panels A, B, and C are located within the Tygee Creek basin watershed outside the CEA, and thus do not contribute to cumulative effects described here.

The previously mined Panels D and E are located adjacent to tributaries to Sage Creek, which joins Crow Creek north of Deer Creek. Crow Creek flows northeastward into Wyoming, combining with flow from Spring Creek, and enters the Salt River about eight miles upstream from the confluence of Stump Creek with the Salt River. Changes to flow and water quality in Sage Creek would be cumulative to those that occur in Crow Creek.

As described in **Section 4.4.2.1**, although portions of the proposed Panel F ore conveyance system would occur within the Sage Creek and Tygee Creek drainages, the construction and use of an ore conveyance system between Panel F and the existing mill would have no more than a negligible effect on surface water quantity or quality compared to the conditions predicted in the approved 2007 FEIS. First, the proposed Panel F ore conveyor system would generally follow the existing haul road, thus the majority of the route would be within or immediately adjacent to presently disturbed areas. There would be minimal new disturbance of the adjacent ground. Second, there would be no new creek crossings as a result of the ore conveyance system because the conveyor would cross creeks on the existing road crossings. In sum, new sources of disturbed-area runoff and sediments would be negligible. Stormwater runoff and entrained sediments would continue to be managed as part of the approved stormwater management plan for the mine, which would retain the same effectiveness as was described in the 2007 FEIS. At the southern terminus of the ore conveyance system, an ore stockpile would be placed on previously disturbed ground associated with Panel F and would require a new runoff containment pond. Based upon the design of the lined stockpile and management considerations for the pond, as described in **Section 2.4.1.2**, there would be no release of runoff or sediments

outside of this area. Thus, there would be a negligible effect on surface water resources from this aspect of the Panel F ore conveyor system.

5.4.3 Past and Present Disturbances

In addition to past mining activities at Panels D and E, the commencement of mining in Panel F, and construction of the haul road to Panel G, cultivated agriculture and livestock pasture land uses occur on private land located in the bottom of the Crow Creek Valley upstream of Sage Creek. Many of the past and current human activities within the CEA including mining, livestock grazing, timber harvesting, and road construction can increase sediment loads to streams and result in channel instability. Long-term sediment sources and loads are expected to be similar to those reported in the 2007 FEIS.

Surface water sampling for streams in the vicinity of the Smoky Canyon Mine, including several tributaries to Crow Creek, has noted the presence of COPCs and at times in concentrations above surface water quality standards. The 2007 FEIS discussed this subject thoroughly, noting exceedances in Pole Canyon Creek below the Pole Canyon ODA for cadmium, nickel, selenium, and zinc; Hoopes Spring for selenium; South Fork Sage Creek for selenium; and Lower Sage Creek (between Hoopes Spring and Crow Creek) for selenium. The RI/FS Report (Formation Environmental 2014) also discusses selenium contamination in these areas, increases in selenium load at a number of locations, and new predictions of future concentrations.

Measures such as rerouting the perennial Pole Canyon Creek around the Pole Canyon ODA and improving cover designs over ODAs in order to reduce infiltration have been implemented and continue presently. As described in **Section 2.3.2**, the Agencies continue to work with Simplot to remediate selenium issues at the Smoky Canyon Mine. Subsequent to the 2007 FEIS, the remediation efforts specified for the Pole Canyon ODA were implemented. Treatability studies have been initiated at Hoopes Spring and South Fork Sage Creek Springs to reduce selenium concentrations downstream (Formation Environmental 2014).

The 2007 FEIS predicted additional selenium loads to South Fork Sage Creek and Deer Creek from the Panels F and G operations. Concentrations of selenium in South Fork Sage Creek were predicted to be below the surface water standard under the approved alternative once remedial and closure activities at the northern portions of the Smoky Canyon Mine were completed and found to be effective. The predicted selenium loading to South Fork Sage Creek Spring from Panel F is not expected to peak for over 100 years after mining in Panel F. This was anticipated to allow more than enough time for the remediation of water quality impacts from the Smoky Canyon Mine facilities north of South Fork Sage Creek to be fully effective in reducing COPC concentrations in the Sage Creek drainage to below applicable surface water standards before the loading from Panel F was added. The 2007 FEIS also predicted that the long-term water quality in Sage Creek at its confluence with Crow Creek, including the loading from Panel F, would comply with the surface water standards. Downstream of this point in Crow Creek, additional inflows were predicted to reduce the selenium concentrations in surface water due to dilution and interaction with stream aquatic chemistry factors such as vegetation and substrate.

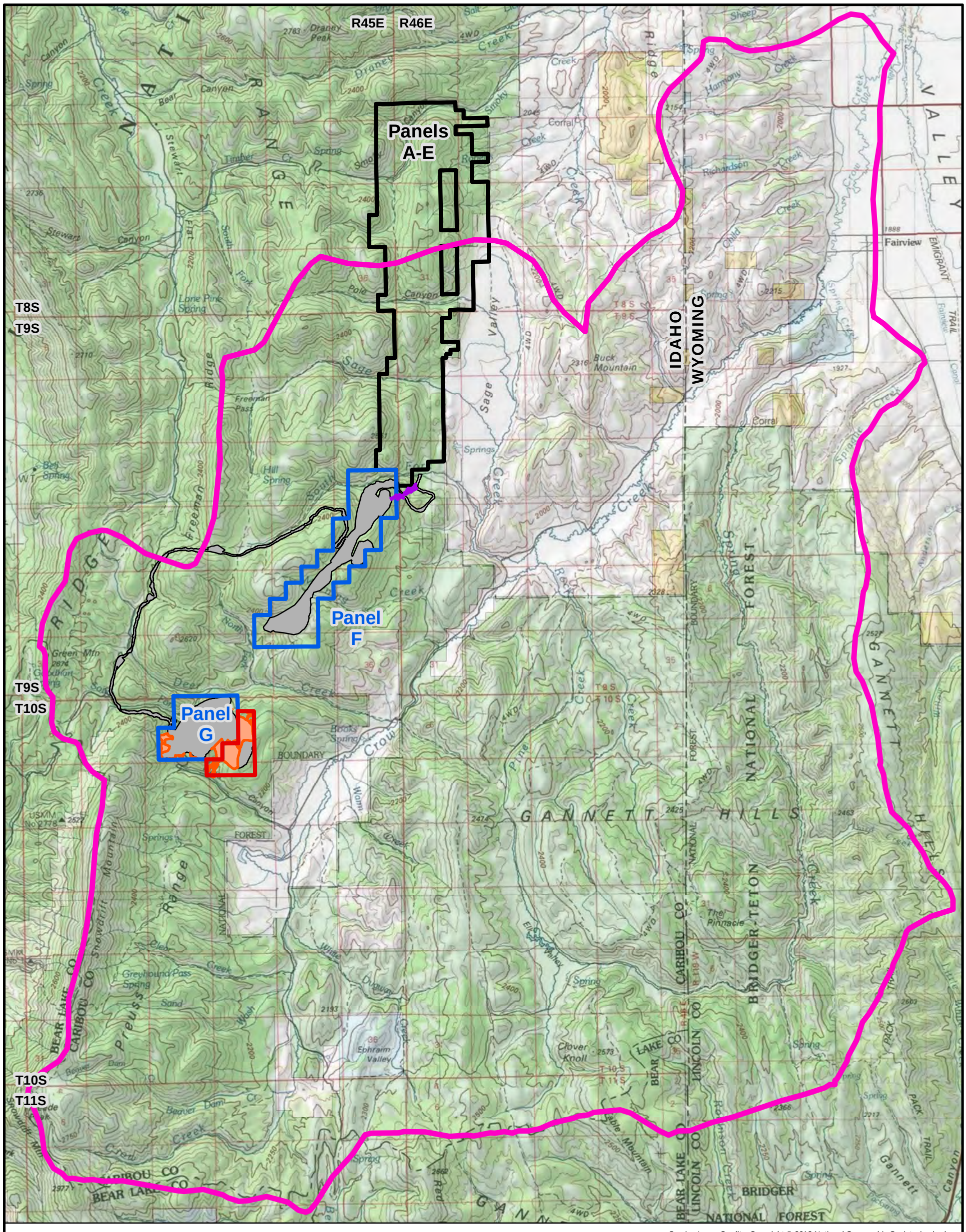


Figure 5.4-1
Cumulative Effects Area for Surface Water Resources
Panel F & G Lease/Mine Plan Modifications EIS

The RI/FS Report (Formation Environmental 2014) predicts higher selenium loading from Sage Creek than that predicted by the 2007 FEIS. It predicts for a peak selenium concentration (without considering attenuation), attributed primarily to Sage Creek contributions, of about 0.024 mg/L at CC-1A during average low flow conditions, or about five times higher than that predicted for nearly the same location in the 2007 FEIS. However, the predicted timing of the peak selenium concentrations in the RI/FS model (which only considers selenium sources north of South Fork Sage Creek) is about 2015. By the end of the model time period (year 2050), selenium concentrations are predicted to drop to just above the standard of 0.005 mg/L. At that time, the curve appears essentially asymptotic to the standard line, so it is not clear whether or when concentrations would further decline enough to meet the standard.

The impacts from the mining of Panel G were also described in the 2007 FEIS (but not considered in the RI/FS). The peak concentrations and their timing were described for Deer Creek, Books Spring, and lower Crow Creek. The predicted peak selenium concentrations were all well below the surface water standards and were predicted to occur more than 50 years following the onset of mining in Panel G. Although the Crow Creek peak selenium concentration would be cumulative with that in Sage Creek, the water quality in Sage Creek was expected to comply with the applicable water quality standards at the time of the peak selenium concentration in Crow Creek.

It is clear that the predicted timing of the peak selenium concentrations from the Sage Creek watershed and the Deer Creek watershed are different enough that the maximum loads from each would not be additive in Crow Creek downstream of Sage Creek.

Any potential water quality impacts related to past mining activities at the Smoky Canyon Mine are currently under CERCLA investigation. Investigations since the 2007 FEIS was completed have provided additional information on the sources of contamination and predicted future concentrations of COPCs at Hoopes Spring and South Fork Sage Creek Springs (Simplot 2013). This recent work has determined that in addition to the Smoky Canyon Mine Pole Canyon and Panel E facilities discussed in the 2007 FEIS, waste rock fills associated with Panels A and D also contribute COPCs to groundwater that is discharged at Hoopes Spring and South Fork Sage Creek Springs. The peak selenium concentrations at these springs are now predicted in the near future to be greater than previously estimated. However, the Agencies and Simplot are continuing to work toward remediating these conditions, so that the discharge from the springs to Sage Creek will comply with all applicable surface water standards in the future.

5.4.4 Foreseeable Future Disturbances

The reasonably foreseeable developments within the CEA other than the Proposed Action or Action Alternatives that could affect surface water quality or quantity were described in the 2007 FEIS, and included the approved ongoing development of the Smoky Canyon Mine, and potential, but unknown, changes to private agricultural lands. A portion of the proposed East Smoky Project and CERCLA actions associated with the Pole Canyon ODA would occur within the extreme northeastern portion of the CEA, but no effects to surface water are anticipated from these actions due to associated project design features and EPMs.

The Proposed Action or Action Alternatives would not change the current conditions in surface streams east of Crow Creek or south of Wells Canyon. The Proposed Action or Action

Alternatives would not change the current conditions in surface streams in the Sage Creek drainage. Therefore, there would be no cumulative effect to the Sage Creek watershed.

As described in **Section 4.4**, the Proposed Action or Action Alternatives would result in additional disturbances that could generate sediments, but there would also be additional sediment ponds designed and positioned to capture runoff bearing the sediments. The net effect would be no additional surface water quality impacts due to sediment releases. The Proposed Action or Action Alternatives would also reduce runoff to Deer Creek and Wells Canyon by retaining storm flows, but because the net change to baseflows is predicted to be negligible, there would be negligible contributions to cumulative effects (**Section 4.4.2**).

As also described in **Section 4.4.2**, by using a GCLL to cover the seleniferous overburden in Panel G, there would be reduced selenium loading to groundwater compared to that modeled and approved in the 2007 FEIS. As the predicted concentrations at groundwater discharge points associated with lower Deer Creek, Books Springs, and Crow Creek would be reduced by an equivalent proportion, so would the potential concentration in the surface waters downstream of these inputs.

5.4.5 Cumulative Disturbances

The net effect on selenium concentrations in Sage Creek and its tributaries, including Hoopes Spring, would not increase due to the Proposed Action or Action Alternatives. This is because groundwater and surface water affected by the Proposed Action or Action Alternatives does not flow into the Sage Creek watershed. The predicted selenium load from the Proposed Action or Action Alternatives to the groundwater and surface water in the Project Area would be less than that predicted by the 2007 FEIS. In both cases, however, selenium concentrations in Deer Creek would comply with surface water standards. Selenium concentrations in Crow Creek downstream of Deer Creek but upstream of Sage Creek would also comply with surface water standards. Downstream of Sage Creek, Crow Creek's selenium concentrations may continue to be greater than the standard at CC-1A, regardless of Panel G activities, but the Proposed Action or Action Alternatives would contribute less selenium than under the No Action, which would continue the 2007 FEIS-approved development. The selenium concentration was predicted where Crow Creek reaches the Wyoming border, based upon the RI/FS Report (Formation Environmental 2014). That report predicts a peak selenium concentration (not including loading from Panel G) at CC-WY-01 of about 0.020 mg/L in about 2015, dropping to about 0.002 mg/L by 2050. This is well before the peak selenium load in Deer Creek is predicted to occur.

5.4.6 Cumulative Effects

Under the Proposed Action or Action Alternatives, effects to Deer Creek and Crow Creek water quality immediately downstream of the Proposed Action or Action Alternatives are expected to comply with all applicable water quality standards. Because the predicted effects to surface waters in lower Deer Creek and Crow Creek east of Panel G would be less than those predicted in the 2007 FEIS, the cumulative effects in these streams under the Proposed Action or Action Alternatives would be less than described in that document. Further downstream in Crow Creek, below Sage Creek, the selenium concentrations would be affected by contributions of selenium from Smoky Canyon Mine activities that are currently subject to CERCLA, regardless of whether an Action Alternative or the No Action Alternative is selected for Panel G. The intent of

the CERCLA remediation activities is to reduce selenium concentrations downstream of the Smoky Canyon Mine to comply with applicable surface water standards.

5.5 SOILS

5.5.1 CEA Boundary

The CEA boundary for soils (Figure 5.4-1 in the 2007 FEIS), and the rationale for it, is the same as described in the 2007 FEIS for ease of analysis, even though actual disturbance to soils from the Proposed Action or Alternative 1 would result in only approximately 170 acres (125 acres under Alternative 2) immediately adjacent to or within existing and approved disturbance associated with Panels F and G. The boundary of the CEA encompasses approximately 148,956 acres.

5.5.2 Introduction

The CEA for soil resources includes private lands, state land, BLM land, portions of the CNF in southeastern Idaho, and portions of the Bridger-Teton National Forest in southwest Wyoming (see Table 5.4-1 of the 2007 FEIS). The USFS administers the largest amount of land within the CEA (71 percent) followed by private land (25 percent), with the state and BLM administering a few percent each of the total area. Major land uses in the CEA are timber harvesting, livestock grazing, agriculture, and mining. The area is also used for hunting, fishing, and other outdoor recreation where OHV use can disturb soil resources, but the effects of these activities on soils are insignificant compared to the other four major land uses.

5.5.3 Past and Present Disturbances

In addition to approval of the original Panels F and G project and ongoing mining activities at the Smoky Canyon Mine, other past and present land uses (ground disturbances) in the CEA that affect soils include timber harvests, burned areas, agriculture (including private land development), livestock grazing, utility and pipeline corridors, and roads/trails. The 2007 FEIS thoroughly describes the impacts that these past and present disturbances within the CEA have on soils.

Of all the land uses in the CEA that can affect soils, the most significant one is mining because the soils within the disturbed areas are physically removed and then replaced during reclamation activities. The only mining in the CEA is at the Smoky Canyon Mine. Past, present, and/or permitted mining activity at the Smoky Canyon Mine has or eventually will disturb approximately 3,886 acres of soil resources in the CEA (2,437 acres of past disturbance and 1,449 acres of presently approved disturbance). Additional soil disturbance in the CEA occurred in 2004 due to phosphate exploration in the Wells Canyon lease. Current mining practice requires topsoil salvage and reapplication during reclamation. Reclamation, which stabilizes disturbed soils, is conducted concurrently with ongoing mining activities, such that when mining is completed in one area, reclamation begins while mining proceeds to another area.

In addition, as thoroughly discussed in the 2007 FEIS, the concentration of selenium and other metals in soils and vegetation has been identified in some reclaimed portions of the mine. Various studies and site investigations have occurred at the Smoky Canyon Mine to improve reclamation practices and reduce potential impacts to soils from these COPC concentrations.

5.5.4 Foreseeable Future Disturbances

The reasonably foreseeable developments in the CEA include future mining as previously described for the East Smoky Project (847 acres) and exploration drilling at Freeman Ridge/Husky 2 (168 acres), resulting in the potential disturbance of approximately 1,015 acres from these two actions, plus ongoing livestock grazing and limited recreational use. Additional mining-related disturbances could occur within the CEA depending upon the actual locations of disturbance from proposed mining activities at the future Husky/North Dry Ridge Mine and exploration activities at the Freeman Ridge/Husky 2 and Dry Ridge sites. Ongoing CERCLA actions, such as placing a geologic cover over the Pole Canyon ODA, are also anticipated.

5.5.5 Cumulative Disturbances

Past, present, and reasonably foreseeable quantifiable mining activities in the CEA result in an estimated 4,900 acres of disturbance to soils. Additional disturbances are also anticipated from portions of future mining and exploration activities (i.e., Husky/North Dry Ridge Mine, and Freeman Ridge/Husky 2 and Dry Ridge exploration) located within the CEA.

Any potential sediment from the Proposed Action or the Action Alternatives would be contained on site in designated stormwater control features and would not be cumulative with the existing baseline sediment releases unless an upset condition occurred.

The Proposed Action and the Action Alternatives would reduce the exposure of seleniferous overburden to the surface environment by using either all GCLL (Proposed Action) or a combination of GCLL and the previously approved geologic store and release cover as described in **Chapter 2** (Alternatives 1 and 2). Further, the planned construction of a geologic cover on the Pole Canyon ODA would also minimize the exposure of seleniferous overburden within the CEA.

With implementation of the Proposed Action or Action Alternatives, up to approximately 10 acres of stormwater control features would not be reclaimed and would be cumulative with the unreclaimed highwalls and other permanent disturbance within the CEA.

5.5.6 Cumulative Effects

Known acreages of disturbance to soils in the CEA from mining activities represent approximately 3.3 percent of the CEA. Considering past, present, and foreseeable future (i.e., mining, grazing, recreation, and fire) disturbances to soil resources combined with up to a maximum of 170 acres from the Proposed Action or Alternative 1 or 125 acres from Alternative 2, cumulative effects to soil resources are expected to be negligible to minor.

The majority of the soils disturbed within the CEA occur as a result of mining. Current mining practice requires topsoil to be removed and stockpiled for future reclamation, which reduces the overall long-term cumulative effects. Other activities such as timber harvesting, livestock grazing, and agriculture that contribute to soil erosion and soil disturbance within the CEA are expected to continue, but generally represent more minor cumulative effects to soil resources within the CEA than mining activities.

5.6 VEGETATION

5.6.1 CEA Boundary

The CEA boundary for vegetation, and the rationale for it, is the same as described in the 2007 FEIS. The boundary of the CEA encompasses approximately 148,956 acres. The actual disturbance to vegetation from the Proposed Action or Alternative 1 would up to a maximum of 170 acres (125 acres under Alternative 2) immediately adjacent to or within existing and approved disturbance associated with Panels F and G.

5.6.2 Introduction

Disturbance of vegetation in the CEA occurs primarily through activities related to mining, agriculture, private land development, timber harvests, grazing, wildfires, prescribed burns, and OHV use. Past, present, and reasonably foreseeable developments in the CEA are the same as those described in **Section 5.5**. The 2007 FEIS provides the acreage/disturbance of various types of vegetation from land use that has been affected in the CEA by past and present activities. As described in the 2007 FEIS (Section 5.6), the amount and distribution of vegetation cover types in the CEA were analyzed using USFS GIS mapping and Idaho and Wyoming Gap Analysis Program (GAP) maps. Sagebrush/shrub, conifer and aspen were found to comprise the majority of the CEA. The 2007 FEIS also reported the largest land use within the CEA is from agriculture (6,018 acres), which accounts for approximately 4 percent of the CEA area.

5.6.3 Past and Present Disturbances

Impacts to vegetation from past and present disturbances associated with timber harvest, forest product extraction, grazing, and mining activities were reported by the 2007 FEIS to total approximately 12,206 acres.

There is no quantifiable data on the number of acres currently affected by noxious weeds within the CEA; however, past and present surface disturbances (i.e., roads, mining and exploration activities, and private land development) have introduced noxious weeds and increased the susceptibility for their establishment. Projects on NFS lands require protection measures and/or treatment to minimize the spread and establishment of noxious weeds on disturbed areas.

As briefly described in **Section 5.5.3**, vegetation growing at some reclaimed portions of the Smoky Canyon Mine has been found to contain elevated levels of various COPCs. This is thought to be due to old and insufficient reclamation practices and, as a result of this discovery, reclamation practices have changed in terms of overburden segregation and topsoil salvage. These revised reclamation practices and the development of more robust ODA cover designs assist in reducing the potential for selenium uptake in reclamation vegetation growing on the ODAs.

5.6.4 Foreseeable Future Disturbances

The reasonably foreseeable disturbances within the CEA that could affect vegetation are similar to those described in **Section 5.5.4**, and the largest potential foreseeable future disturbance to vegetation within the CEA would be from mining at the East Smoky Project (847 acres) and exploration at Freeman Ridge/Husky 2 (168 acres), resulting in the potential disturbance of approximately 1,015 acres from these two actions. In addition, depending upon the actual

locations of eventual potential disturbance from the future Husky/North Dry Ridge Mine and the Dry Ridge exploration project, more mining-related disturbances could occur within the CEA. Future activities such as placing a geologic cover on the Pole Canyon ODA would help to further minimize overall COPC-related impacts to vegetation within the CEA.

5.6.5 Cumulative Disturbances

New surface disturbance from the Proposed Action and Alternative 1 (170 acres) or Alternative 2 (125 acres), when added to past and present known disturbances, would result in approximately 9 percent of the CEA vegetation being disturbed (13,391 acres out of 148,956).

The surface disturbance from implementing the Proposed Action or Action Alternatives would also increase the cumulative effect of disturbed acres within the CEA susceptible to noxious weed invasion. However, prevention control/treatment requirements would limit this overall cumulative effect within the CEA.

The Proposed Action or Action Alternatives are not anticipated to impact any TECPS plant species, so there would be no associated cumulative impacts.

In terms of potential bioaccumulation of selenium in vegetation growing on future reclamation on Panels F and G, as stated in the 2007 FEIS and in **Section 5.5.5**, both the previously approved geologic store and release cover and the proposed GCLL would reduce the exposure of seleniferous overburden to the surface environment. EPMs and BMPs would apply to any future mining activities, so that vegetation with high selenium levels would be confined to limited areas situated in the northern portion of the existing Smoky Canyon Mine where older reclamation practices were originally used. Thus, the selenium content of growth medium and consequent bioaccumulation by vegetation on new reclaimed areas in the CEA would not increase under the Proposed Action or Action Alternatives and no cumulative impacts are expected to vegetation in the CEA.

5.6.6 Cumulative Effects

Adding the Proposed Action or Action Alternatives disturbances to past, present, and foreseeable future vegetation disturbances, cumulative effects to vegetation in the CEA would be short term and negligible to minor due to the temporary nature of the disturbances. Mining disturbances would replace existing vegetation with grassland until succession could occur over time, although vegetation on the proposed GCLL portions would be permanently restricted to grasses, forbs, and other shallow rooted species. Disturbed lands would be more susceptible to weed infestations but control measures would be implemented.

5.7 WETLANDS

5.7.1 CEA Boundary

The CEA boundary for wetlands, and the rationale for it, is the same as described in the 2007 FEIS. As stated in the 2007 FEIS, according to CNF, GAP, and National Wetland Inventory data/coverages, approximately 4,400 acres of wetlands occur within the CEA.

5.7.2 Introduction

Impacts to most wetlands within the CEA have occurred mainly through mining and road building activities. Past and present ground disturbances in the CEA that could directly impact wetlands are presented in the 2007 FEIS (see Table 5.4-1 of the 2007 FEIS) and include mining, mineral exploration, agriculture, utility and road construction, and fire. The reasonably foreseeable developments in the CEA are the same as those described in **Section 5.4**.

5.7.3 Past and Present Disturbances

As described in the 2007 FEIS, the documented impacts to wetlands (primarily from mining activities) in the CEA amount to approximately 143 acres. Past and present non-mining related construction disturbances from Crow Creek Road and other USFS roads in Smoky Canyon, Wells Canyon, Deer Creek, and along Diamond Fork Creek have disturbed an unspecified amount of wetlands. The documented past and present impacts to wetlands (143 acres) amount to approximately 3 percent of the total wetlands in the CEA.

5.7.4 Foreseeable Future Disturbances

In addition to those disturbances described in **Section 5.5.4** that could potentially impact wetlands**,** other wetland impacts, although not specifically described, likely have or will occur from road maintenance, livestock grazing, and other activities, such as those conducted on private lands within the CEA. These impacts cannot be quantified due to lack of descriptive data.

5.7.5 Cumulative Disturbances

The Proposed Action and Action Alternatives would not result in disturbance to wetlands, and therefore would not contribute to cumulative disturbances to wetlands.

5.7.6 Cumulative Effects

The Proposed Action and Action Alternatives would not result in disturbance to wetlands, and therefore would not contribute to cumulative disturbances or effects to wetlands. Cumulative effects to wetland resources in the CEA would be the same as described in the 2007 FEIS.

5.8 WILDLIFE

5.8.1 CEA Boundary

The CEA boundary for wildlife species (Figure 5.8-1 in the 2007 FEIS) generally includes suitable habitat for a given species within a 15-mile radius surrounding the Project Area. The rationale for the wildlife CEA boundary is the same as described in the 2007 FEIS. The wildlife CEA encompasses approximately 452,000 acres, of which approximately 65 percent (294,000 acres) is administered by the USFS.

5.8.2 Introduction

As described in the 2007 FEIS, GAP and CNF data indicate coniferous forest, aspen, and sagebrush are the dominant vegetation types within the CEA. Riparian areas and other vegetation communities also occur throughout the CEA in lesser amounts. This diversity in habitat types allows for many wildlife species to utilize the area.

5.8.3 Past and Present Disturbances

As described in the 2007 FEIS (Section 5.8 and Table 5.8-1), past and present disturbances to wildlife habitat within the CEA have resulted from mining activities, timber harvests, recreation facilities, existing roads/trails, and livestock grazing. All of the reasonably foreseeable actions presented in Section 5.8 of the 2007 FEIS, along with the approved Panels F and G project, are now considered past and present disturbances and total approximately 16,300 acres. The 2007 FEIS describes the impacts that these past and present disturbances either have had and/or continue to have on wildlife resources within the CEA. In general, these impacts include habitat changes, competition for forage and direct impacts from grazing activities, displacement from human presence, and fragmentation of certain wildlife populations and their habitats.

5.8.4 Foreseeable Future Disturbances

As previously described in **Sections 5.1** through **5.7** within the applicable CEAs, the largest disturbance from reasonably foreseeable actions within the CEA would result from future mining activities. Thirty-five percent (158,000 acres) of the wildlife CEA occurs on private lands. Past and present actions on private land within the CEA have mainly included agriculture and grazing activities. Housing development has also occurred on the large ranches within the CEA. Impacts on private lands in the CEA are difficult to quantify due to lack of specific data. Although disturbance of wildlife habitat on private land cannot be quantified with existing data, it would be an amount less than the private land ownership area.

No future timber harvests are scheduled within the wildlife CEA (USFS 2013b).

5.8.5 Cumulative Disturbances

Cumulative disturbances as described in the 2007 FEIS would essentially be identical for wildlife resources when the potential disturbance of the Proposed Action or Alternative 1 (170 acres) or Alternative 2 (125 acres) is added to the past, present, and reasonable foreseeable actions within the CEA. For TEPC and USFS-Sensitive wildlife species, including MIS, the cumulative disturbances would also be similar as described in the 2007 FEIS and include habitat loss and displacement from human presence and disturbance.

As summarized in the 2007 FEIS, habitat impacts to the northern goshawk would be the most severe of any MIS species, as forest habitat would be lost due to the Project within the CEA for the long term and may increase competition in undisturbed suitable habitat within the CEA. Past, present, and reasonably foreseeable timber harvests within the wildlife CEA have and would continue to contribute to the loss of suitable habitat areas for the nesting and fledging of young goshawks. Because the CNF (and hence, the CEA) is a very small portion of the total range of northern goshawk (USFS 2003b), long-term cumulative impacts to goshawk would be minor. Regarding sage-grouse, cumulative impacts would be negligible, as low-elevation sagebrush most suitable for sage-grouse would not be disturbed by mining. Sharp-tailed grouse are expected to occur in the CEA; however, cumulative impacts to this species would be negligible because the Proposed Action or Action Alternatives would not displace individuals elsewhere in the CEA.

In terms of wildlife exposure to potentially toxic levels of selenium on future reclamation at Panels F and G, as stated in the 2007 FEIS and in **Section 5.5.5**, both the approved geologic store and release cover and the proposed GCLL are intended to reduce the exposure of seleniferous overburden to the surface environment. EPMs and previously approved BMPs would apply to any future mining activities, so that vegetation with high selenium levels would be confined to limited areas in the northern portion of the existing Smoky Canyon Mine on areas where older reclamation practices were originally used. Thus, potential wildlife exposure to selenium in soil and vegetation in the CEA would not increase under the Proposed Action or Action Alternatives, and no cumulative impacts would be expected.

Implementing the Proposed Action or Action Alternatives could result in the displacement of some forms of recreation (e.g., hiking, hunting, ATV use) from the Project Area into surrounding areas, which in turn could potentially displace wildlife from those areas. Thus, displacement of some forms of recreation from the Proposed Action or Action Alternatives has the potential to result in a minor cumulative impact to wildlife for the Project duration when added to similar past and present impacts in the CEA.

The Proposed Action or Action Alternatives are not expected to result in additional fragmentation of wildlife habitat because disturbance would occur immediately adjacent to or within existing disturbance.

Bald eagles usually modify their activities and movements to avoid human disturbance (USFS 2003b), and some displacement of bald eagles into adjacent habitats in the CEA would likely occur for the duration of the Proposed Action or Action Alternatives. However, wintering bald eagles occurring along the Crow Creek drainage may be less sensitive to human disturbance as the current wintering area is along a main access route. These individuals are more likely to habituate to the increase in noise from mining. After Project completion, any displaced bald eagles could return to the area as habitat impacts along the Crow Creek drainage would not occur.

Canada lynx, wolverine, and gray wolves may potentially utilize all areas within the CEA. Disturbance associated with activities previously identified and described in **Sections 5.1.3** and **5.8.3** may limit the attractiveness of the CEA to these species, which generally prefer extensive tracts of undeveloped land. Impacts to forested areas associated with the Proposed Action or Alternative 1 would decrease potential linkage habitat for Canada lynx by about 158 acres (less for the Alternative 2) and result in a minor cumulative effect when added to other past, present, and reasonable foreseeable actions in the CEA. However, since disturbance associated with the Proposed Action or Action Alternatives, including the existing Smoky Canyon Mine, are oriented in a north-south direction and forested areas are available for reasonable movement around these areas, the overall impact to travel/linkage corridors should be minimal.

As described in the 2007 FEIS and **Section 3.8**, baseline surveys and other known recorded observations (USFS 2003b) have documented that the CEA is used by at least the following USFS-sensitive species: boreal owl, flammulated owl, northern goshawk, sage-grouse, three-toed woodpecker, wolverine, and the great gray owl. **Section 4.8** identifies potential direct and indirect impacts to these species resulting mainly from habitat loss and displacement due to the Proposed Action or Action Alternatives. Disturbance associated with the Proposed Action and Alternative 1, which includes the removal of about 170 acres of various habitats (125 acres for Alternative 2), could impact these USFS-Sensitive species known to occur in the CEA. Any

future management activities must meet RFP standards and guidelines specifically developed to protect habitat for these species, thus future management activities should result in negligible to minor cumulative effects to these species via habitat losses and displacement.

Implementing the Proposed Action or Action Alternatives would not have any potential direct or indirect impacts to western toads, thus there would be no cumulative impact as a result of the Proposed Action or Action Alternatives.

5.8.6 Cumulative Effects

Cumulative effects to wildlife are expected to be long term and negligible to minor. Cumulative effects due to displacement of wildlife would negligible.

5.9 FISHERIES AND AQUATICS

5.9.1 CEA Boundary

The CEA boundary for fisheries and aquatics (Figure 5.4-1 in the 2007 FEIS), and the rationale for it, is the same as described in the 2007 FEIS.

5.9.2 Introduction

Potential effects to aquatic habitat from mining in the CEA include temporary reductions of runoff contribution to local streams, increased sedimentation due to road construction and logging, and the introduction of higher levels of selenium into streams by surface and subsurface flow of water. These potential water quantity and quality impacts to the surface waters in the CEA have been previously described in **Section 5.4**.

5.9.3 Past and Present Disturbances

Cumulative effects to fisheries and aquatic resources from past and present disturbances within the CEA were thoroughly addressed in Section 5.9 of the 2007 FEIS. These effects have included livestock grazing near aquatic habitats, potential for whirling disease and non-native fish issues, various effects from timber harvest activities, and increased levels of selenium and other COPCs in surface water and stream sediments that can result in bioaccumulation in the invertebrates and fish that inhabit these areas.

5.9.4 Foreseeable Future Disturbances

In addition to ongoing livestock grazing and limited recreational use as described in **Section 5.5.4**, Section 5.9 of the 2007 FEIS thoroughly describes activities expected to continue into the foreseeable future. These activities may collectively increase sediment delivery to streams, which can adversely impact native fishes by filling gravels and interstitial spaces used for reproduction and cover. Activities that may introduce sediment include mining activities, road construction, agriculture, private land development, wildfires, and prescribed burns. Potential selenium inputs to surface waters in the CEA would also occur as described in the 2007 FEIS. Improved mining practices and cover designs should aid in minimizing potential impacts to fisheries and aquatic resources within the CEA from future mining operations.

5.9.5 Cumulative Disturbances

As described in **Section 4.9**, there are no fish-bearing streams within the Project Area that would be impacted and only negligible effects to AIZs and intermittent channels within the CEA would occur as a result of the Proposed Action or Action Alternatives. Other losses of intermittent channels within the CEA are from past construction activities (e.g., road building, housing development) that are expected to continue into the future. These losses, result in a cumulative disturbance that would decrease the overall flow and flow regulation, sediment control, nutrient delivery, and number of refugia and spawning areas during high flows, all of which impact native fishes in the CEA. The Proposed Action or Action Alternatives would not impact any perennial streams, thus no cumulative impacts to these resources are anticipated.

The Proposed Action or Action Alternatives are expected to result in only negligible surface water discharges of sediment to any adjacent streams outside the Project Area due to the application of EPMs, previously approved BMPs, and stormwater features to contain all runoff and sediment on the mine site. As discussed in **Sections 4.4** and **5.4**, net change to baseflows from the retention of runoff from the mine disturbances from the Proposed Action or Action Alternatives to Deer Creek and Wells Canyon was predicted to be negligible, so cumulative disturbances would also expected to be negligible.

The primary impact of the Proposed Action or Action Alternatives on surface water and, consequently, the fisheries and aquatic resources in the CEA with regard to selenium would be the potential for increasing the loads in surface waters within the CEA. The Proposed Action or Action Alternatives would alter the type of covering placed upon seleniferous overburden, thereby reducing the selenium loading to groundwater compared to that modeled and approved in the 2007 FEIS. As the predicted concentrations at groundwater discharge points associated with lower Deer Creek, Books Springs, and Crow Creek would be reduced by an equivalent proportion, so would the potential concentration in the surface waters downstream of these inputs. This improvement would continue to maintain surface water quality and could be a beneficial cumulative impact.

5.9.6 Cumulative Effects

Overall cumulative effects to fisheries and aquatics and specifically to YCT populations within the CEA are anticipated to be minor, but because of the uncertainty surrounding the life histories of fish in the CEA and the impacts of selenium on YCT in general, cumulative impacts are evaluated considering the possibility of a significant impact scenario. This scenario is thoroughly described in Section 5.9 of the 2007 FEIS and summarized here.

Cumulative impacts from selenium on native fishes are generally expected to be minor or, under the significant impact scenario, moderate. This is because the surface water criteria were designed to be protective of fish, and the Proposed Action or Action Alternatives would comply with surface water criteria with regard to new inputs and would actually reduce loading potential in surface water within certain portions of the CEA as previously described. However, cumulative impacts have the *possibility* to be major over the short or long term in the *unlikely* event that unforeseen circumstances occur with regard to selenium control measures or predicting long-term bioaccumulation in native fishes in some habitats within the CEA.

The cumulative effects from ongoing grazing activities and intermittent channel loss to fisheries and aquatic resources in the CEA would be minor. Impacts from the Proposed Action or Action

Alternatives would contribute only negligible impacts to the cumulative effects upon YCT and their habitat when past, present, and foreseeable future project impacts are considered in sum. These populations are considered more susceptible to cumulative effects because of the degree of their isolation. Considering the combined effects of all past, present, and foreseeable future impacts to native fishes in the CEA under the significant impact scenario, cumulative impacts to native fishes in the CEA would be long term and moderate.

5.10 GRAZING MANAGEMENT

5.10.1 CEA Boundary

The CEA boundary for grazing management (Figure 5.10-1 in the 2007 FEIS) is the same as that described in Section 5.10 the 2007 FEIS. The boundary of the CEA encompasses 25,795 acres. Portions of four of the grazing allotments in the CEA described in Section 5.10 of the 2007 FEIS would be impacted by the Proposed Action or Action Alternatives.

5.10.2 Introduction

Cumulative effects to grazing in the CEA primarily occur from mining and timber harvesting. Recreation and road building can also affect grazing but to a negligible extent compared to the other two land uses. Restrictions have been placed on grazing permit holders in the CNF in the past as a result of mining and timber sales on the affected allotments. Currently, grazing is not allowed on active mine areas, livestock trailing is limited across mine areas, and no watering is allowed in runoff detention ponds or water flowing from mine overburden seeps. Grazing is severely restricted in new timber plantations. The grazing permit holder is required to use only certified weed-free hay or straw on USFS lands.

5.10.3 Past and Present Disturbances

Table 5.10-1 in the 2007 FEIS shows the past and present disturbance areas within the CEA, totaling 1,562 acres. An additional 1,449 acres either have been or are approved to be disturbed in the CEA as a result of the 2007 FEIS and the 2008 RODs. The total estimated past and present disturbances in the grazing CEA is approximately 3,011 acres.

Grazing is currently not approved by the USFS on the Smoky Canyon Mine, although some grazing of reclaimed areas has been reported. Mining exploration areas in the CEA which have been reclaimed are open to grazing. The timber harvest areas within the CEA date back to the 1970s. Grazing is allowed in historic timber harvest areas.

5.10.3.1 Selenium in Vegetation – Smoky Canyon Mine

A detailed explanation of selenium in vegetation and associated ramifications for grazing at Smoky Canyon Mine is contained in Section 5.10 of the 2007 FEIS.

As described in the 2007 FEIS, two past studies at Smoky Canyon Mine indicate that reclamation vegetation rooted in salvaged topsoil over a chert cover has selenium concentrations at or below background and well below the IDEQ removal action level. Livestock are not permitted to graze on the reclaimed areas of the Smoky Canyon Mine until those areas are accepted by the BLM and USFS for bond release. The northern portion of the Smoky Canyon Mine where older reclamation practices were originally used and current reclamation vegetation

has elevated selenium concentrations would need to be remediated to bring these concentrations below acceptable levels before grazing would be allowed.

The 191-acre Twin Creek timber sale area is closed to grazing and livestock may be temporarily displaced to adjacent parts of the affected allotments until the young trees are tall enough to withstand livestock use.

5.10.4 Foreseeable Future Disturbances

The foreseeable future disturbances within the grazing CEA include a very small portion of the Dry Ridge exploration area, and portions of the Freeman Ridge/Husky 2 exploration areas (**Figure 5.1-1**). Vegetation would be removed to construct temporary roads to drilling locations. Overall vegetation disturbance would be relatively small, but it may provide an opportunity for establishment of invasive species or noxious weeds as discussed in **Section 5.6**. Projects on NFS lands require protection measures and/or treatment to minimize the spread and establishment of noxious weeds on disturbed areas.

Natural foreseeable future disturbances affecting grazing resources would include insect and disease activity in forested stands, vegetation succession and drought cycles (influencing plant communities), and noxious weed invasions. Noxious weed abatement efforts by the CNF would continue.

5.10.5 Cumulative Disturbances

Cumulative disturbances to grazing would include those described in Section 5.10 the 2007 FEIS, along with future disturbances from exploration as described in **Section 5.10.4**. The vast majority of the disturbance associated with the Dry Ridge exploration area would be outside the CEA; that within the CEA would be negligible. Approximately half of the Freeman Ridge/Husky 2 exploration area is within the CEA, which could potentially result in approximately 80 to 90 acres of disturbance within the CEA. Total past and present cumulative disturbances in the CEA are estimated to be 3,100 acres. These disturbances would be distributed among the various grazing allotments in the CEA and no one allotment would be expected to be disproportionately impacted.

The Proposed Action and Alternative 1 would disturb approximately 170 acres (125 acres under Alternative 2), which would be less than one percent of the grazing area within the CEA. Livestock grazing in this area would be temporarily displaced to adjacent parts of the affected allotments. The removal of the currently suitable grazing acres in the previously approved mine footprint may also result in the CNF decreasing the permitted stocking rates in the affected allotments.

The Proposed Action or Action Alternatives would not impact any transportation routes used for trailing, nor would they present a barrier to movement of animals in the rest of the allotment or adjacent allotments in the CEA. Therefore, the Proposed Action or Action Alternatives would not contribute to cumulative impacts.

5.10.5.1 Water Availability

The Proposed Action or Action Alternatives would not result in a reduction in water availability in the CEA, and therefore would not contribute to cumulative impacts to water availability.

5.10.6 Cumulative Effects

There would be no cumulative effect from the Proposed Action or Action Alternatives to water sources or to trailing routes for livestock. Impacts to grazing would generally be temporary, as described in **Section 4.9**; disturbed areas would again be suitable for grazing after they have been reclaimed and their rangeland capacity restored. Considering past and present disturbances in the grazing CEA that may impact grazing combined with the Proposed Action or Action Alternatives, cumulative effects to grazing resources would be negligible.

5.11 RECREATION AND LAND USE

5.11.1 CEA Boundary

The CEA boundary for recreation and land use (Figure 5.11-1 in the 2007 FEIS), and the rationale for it, is the same as that described in Section 5.11 of the 2007 FEIS. The boundary for this CEA encompasses approximately 102,500 acres.

5.11.2 Introduction

As noted in the 2007 FEIS, the majority of the CEA is under administration of the USFS (77.2 percent), with some private lands (20 percent), and state and BLM administered lands (1.5 and 1.3 percent respectively). Public recreation is generally available on the public lands in the CEA as described in Section 5.11 of the 2007 FEIS.

5.11.3 Past and Present Disturbances

Past and present disturbance in the CEA is the same as that described in the 2007 FEIS, with the addition of 1,449 acres of mining activities approved by the 2008 ROD, for a total of 3,333 acres. Visitors to the CNF adjacent to the active mining areas would be likely to notice the sight or sound of mining activities, which could detract from the recreational activity.

5.11.4 Foreseeable Future Disturbances

The foreseeable future disturbances within the recreation and land use CEA include the Freeman Ridge/Husky 2 exploration area (168 acres) and the East Smoky Project (847 acres). Exploration work would temporarily impact recreation by adding noise and activity to the area for the duration of the work. Exploration activities may create access routes into areas that were previously not accessible to motorized transportation. New mines would affect recreation similar to the impacts described in **Section 4.11**.

Implementation of the Proposed Action or Alternative 1 would temporarily impact recreation as previously described on 170 acres (or 125 acres under Alternative 2) of the CNF that are currently used for Roaded Modified and Semi-Primitive Motorized recreation. No USFS trails in the CEA would be affected by the Proposed Action or Action Alternatives. The Project Area does not offer unique recreational opportunities that are not also found elsewhere in the immediate vicinity.

5.11.5 Cumulative Disturbances

Cumulative disturbance in the CEA that affects recreation and land use is mainly the active and unreclaimed disturbance from exploration, mining, and related roads and structures. Currently

that figure is approximately 4,348 acres; the Proposed Action and Alternative 1 would add a maximum of 170 acres (125 acres would be added under Alternative 2) to this for an estimated total of 4,518 acres. Up to 4.4 percent of the CEA would be impacted.

5.11.6 Cumulative Effects

While the Proposed Action or Alternative 1 would affect recreation on an additional 170 acres (125 acres under Alternative 2), the cumulative impacts to recreation and land use would be similar to those described in Section 5.11 of the 2007 FEIS. Long-term cumulative impacts to hunters are anticipated to be minimal. Overall, negligible long-term cumulative effects are anticipated to recreation and land use as a result of implementation of the Proposed Action or Action Alternatives.

5.12 INVENTORIED ROADLESS AREAS

5.12.1 CEA Boundary

The CEA area boundary for IRAs (Figure 5.12-1 of the 2007 FEIS), and the rationale for it, is the same as that described in Section 5.12 of the 2007 FEIS. The CEA for IRAs encompasses approximately 161,500 acres. Because the Proposed Action or Action Alternatives would only result in impacts to the SCRA and MPRA, the cumulative disturbance and impacts analysis will only consider those two IRAs.

5.12.2 Introduction

The CEA for IRAs represents the acreage contained in the following eight IRAs (north to south): Stump Creek, Schmid Peak, Dry Ridge, Huckleberry Basin, Sage Creek, Gannet Spring, Meade Peak, and Red Mountain. Within the CEA (eight IRAs), there are approximately 14,000 acres of KPLAs and approximately 6,300 acres of phosphate mining leases, of which approximately 1,300 acres are active leases. As previously noted, only the SCRA and MPRA would be directly impacted by the Proposed Action or Action Alternatives.

5.12.3 Past and Present Disturbances

Past and present disturbances in the IRA CEA are described in Section 5.12 of the 2007 FEIS. Table 5.12-1 in the 2007 FEIS quantifies past and present disturbances within the SCRA (approximately 374 acres) and the MPRA (approximately 32 acres). Additional acreage in the CEA approved for disturbance at the Smoky Canyon Mine by the 2008 RODs totals 1,040 acres in the SCRA and 60 acres in the MPRA. Total past and present disturbances are estimated at 1,414 acres in the SCRA and 92 acres in the MPRA.

In addition to the list of disturbances in Table 5.12-1 in the 2007 FEIS, there are other disturbances within these IRAs that are not quantifiable such as impacts from livestock grazing and recreation. The greatest amounts of past and present impacts are a result of mining at the existing Smoky Canyon Mine and previous exploration activities in the Panels F and G lease areas. These impacts to the IRAs have largely been temporary in nature, since exploration activity disturbance and portions of mining disturbance have been or are being reclaimed.

Past and present disturbance of 1,414 acres within the SCRA represents 0.9 percent of the total CEA area. Past and present disturbance of 92 acres within the MPRA represents 0.06 percent of the area. In both cases, these are negligible amounts.

5.12.4 Foreseeable Future Disturbances

In addition to the Proposed Action or Action Alternatives, the only foreseeable future disturbance within the SCRA or the MPRA of the IRA CEA is a small portion of the Freeman Ridge/Husky 2 exploration project. As only a portion of that project would potentially be within these IRAs, actual disturbance in the IRAs cannot be estimated at this time. Ongoing recreation and grazing activities would continue at present trends and any future actions in these IRAs would be approved and conducted under the most current and applicable IRA regulations.

5.12.5 Cumulative Disturbances

As previously described in **Section 4.12**, the Proposed Action or Action Alternatives would result in direct and indirect impacts to many resources described throughout this EIS, many of which are also roadless and wilderness attributes. Less than one percent of the SCRA and less than 0.1 percent of the MPRA would be impacted by the Proposed Action or Action Alternatives (**Table 4.12-1**). Past and present disturbance within the SCRA and MPRA would be increased by an unknown number of acres resulting from foreseeable projects. The Proposed Action or Alternative 1 would impact approximately 76 acres (29 acres for Alternative 2) within the SCRA. Added to known past and present projects, this represents a cumulative impact of up to 12 percent of the total SCRA (12,710 acres), a large portion of which has or eventually would be reclaimed. The Proposed Action or Action Alternatives would impact 19.4 acres within the MPRA. When added to past and present disturbance (92 acres), this totals approximately 111 acres and still represents a cumulative impact of less than one percent of the total MPRA (44,585 acres).

Future impacts are likely to include the continuation of grazing practices and recreation activities, which are generally not quantifiable; however, management of activities on these lands would likely reduce impacts.

5.12.6 Cumulative Effects

As described in Section 5.12 of the 2007 FEIS, although cumulative impacts have been identified for the SCRA and the MPRA, these cumulative impacts are not anticipated to result in an increased level of direct or indirect impacts to any of the roadless and wilderness attributes than what has already been described in **Section 4.11**. This is because the majority of past and present disturbance represents a relatively small percentage of each affected IRA and, more importantly, the majority of these disturbances has been or would be reclaimed and natural succession will help return impacted areas back to their natural state over time.

5.13 VISUAL AND AESTHETIC RESOURCES

5.13.1 CEA Boundary

The CEA boundary for visual resources (Figure 5.4-1 of the 2007 FEIS) is the same as that described in Section 5.13 of the 2007 FEIS. The boundary for this CEA encompasses

approximately 148,956 acres. The rationale for the CEA boundary is contained in Section 5.13 of the 2007 FEIS.

5.13.2 Introduction

Visibility of the Proposed Action or Action Alternatives from previously identified observation points is limited. As described in **Section 4.13**, the Panel F and G portions of the Project would each only be visible from one previously identified observation point, respectively. However, observation points are representative of views of the Project that may be observed in various portions of the CEA. The visibility of the Project and its impact on visual resources would depend on the proximity of the observer to the Project. The Project would be viewed in the context of other surrounding mining activities and disturbance as viewed from any vantage point. The Project components would be within areas designated Partial Retention and Modification VQO, containing existing mining-related disturbances and having low scenic integrity. Project disturbance would blend with the surrounding activity and disturbance, and may not be distinguishable as an addition to the existing mining disturbance.

5.13.3 Past and Present Disturbances

Section 5.13 and Table 5.13-2 of the 2007 FEIS provide information on past and present disturbances to areas within the CEA totaling 11,117 acres. In addition to that amount, 1,449 acres were approved by the 2008 RODs for the expansion of the Smoky Canyon Mine into Panels F and G. Taken together, past and present disturbances have visually altered approximately 8.4 percent of the CEA.

5.13.4 Foreseeable Future Disturbances

New exploration and mining activities that have been proposed to date in the CEA include the Freeman Ridge/Husky 2 exploration project (168 acres), the Dry Ridge exploration project, and the East Smoky Project (847 acres). Visually, the future East Smoky Project would have similar impacts to those described in **Section 4.13**. Exploration projects would create roads and patches of vegetation removal where holes are drilled, which may or may not be visible or noticeable in the landscape, depending on the observation point.

The Proposed Action and Alternative 1 could potentially add up 170 acres (125 acres under Alternative 2) of initial disturbance to the CEA, all but up to a maximum of 10 acres of which all would be reclaimed. Installation of the GCLL under the Proposed Action or Action Alternatives would permanently alter the vegetation community and impact the visual resources of the area, as that portion of the mine would never be allowed to reforest.

5.13.5 Cumulative Disturbances

The total disturbed area for the Proposed Action or Action Alternatives combined with the currently permitted Smoky Canyon Mine disturbance would represent up to about 8.4 percent of the total CEA. The Panel G portion of the Project covered by the GCLL would be approximately 400 acres for the Proposed Action, and approximately 140 acres for Alternative 1 or 2. This represents up to 0.3 percent of the total CEA.

5.13.6 Cumulative Effects

Reclamation of mined areas in the CEA would reduce the visual contrast between bare earth in the disturbed areas and adjacent forest vegetation. The reclaimed areas would be revegetated primarily with grass and forbs and, in areas not covered by a GCLL, with clusters of planted trees and shrubs. Many reclaimed areas would still be visible but would not be as obvious a visual impact as the mining activities themselves. The portions of Panel G proposed to be covered by the GCLL may be visually noticeable because these areas would not be allowed to reforest. While this may be visually noticeable, it would not be expected to result in changes to the VQOs. As mining activity shifts from one area to another, disturbances are sequentially reclaimed and visual impacts decrease. The landform and color contrast, as well as the obvious presence of mining, would be lessened for those traveling the secondary roads or recreating in the area. Over time, the landscape views inclusive of reclaimed mining areas would become a more acceptable part of the landscape. The eventual establishment of clusters of planted trees and shrubs would restore a setting more similar to the original landscape in approximately 10 to 50 years.

5.14 CULTURAL RESOURCES

5.14.1 CEA Boundary

The CEA boundary for cultural resources (Figure 5.4-1 of the 2007 FEIS), and the rationale for it, is the same as that described in Section 5.14 of the 2007 FEIS.

5.14.2 Introduction

As described in Section 5.14 of the 2007 FEIS, over thirty cultural resource inventories have been conducted within the CEA. A summary of these projects is provided in the 2007 FEIS.

5.14.3 Past and Present Disturbances

Past and present ground disturbances in the CEA that have or may potentially affect cultural resources are identical to those already described in the 2007 FEIS. As discussed in the 2007 FEIS, mining of Panels F and G would impact two sites. Subsequent to publication of the 2007 FEIS, these two sites were determined to be ineligible for the NRHP (Sagebrush Consultants 2013). Past and present disturbances in the CEA such as mining, timber harvest, and road construction have impacted cultural resources through inadvertent damage/destruction and data recovery efforts at the sites.

5.14.4 Foreseeable Future Disturbances

The reasonably foreseeable disturbances in the CEA are the same as those described in **Section 5.4**. No USFS timber sales other than as a part of the Proposed Action or Action Alternatives are proposed for the cultural resources CEA in the current planning cycle. No changes to transportation and recreational uses of the CEA have been proposed.

Changes to private agricultural lands within the CEA are likely as some of these lands may be converted in the future from traditional agricultural utilization (ranching) to more residential and recreational utilization. The Agencies are not aware of any such specific plans and these cannot be evaluated for this cumulative effects analysis.

Continued recreational use of the area creates the potential for vandalism and/or unauthorized artifact collection at sites.

5.14.5 Cumulative Disturbances

Past, present, and reasonably foreseeable disturbance to cultural resources in the CEA have been and would be the result of mining activities, timber harvesting, road development, archaeological excavation, livestock grazing, private development, vandalism, and unauthorized artifact collection. Private development and vandalism/artifact collection are not quantifiable.

Past and present disturbance has impacted cultural resources. However, in the case of ineligible sites, the sites are not considered important resources and avoidance is not required. NRHP-eligible sites within disturbance areas were subject to data recovery (excavation); therefore, the loss of the resource was mitigated. The Proposed Action or Action Alternatives would impact two additional cultural resource sites, neither of which are eligible for the NRHP (**Section 4.14**).

5.14.6 Cumulative Effects

Section 106 of the NHPA requires avoidance and/or mitigation of impacts to NRHP-eligible cultural resources by federal undertakings. As there would be no such impacts from the Proposed Action or Action Alternatives, there would be no cumulative impact to cultural resources.

5.15 NATIVE AMERICAN CONCERNS AND TREATY RIGHTS RESOURCES

5.15.1 CEA Boundary

The CEA boundary (southeastern Idaho, no figure) for Native American concerns and Treaty Rights resources, and the rationale for it, is the same as that described in Section 5.15 of the 2007 FEIS.

5.15.2 Introduction

The ability of Native Americans to practice their traditional culture in the CEA has been reduced through the loss of unoccupied public lands and degradation of the resources over time. The Project Area is 0.13 percent of the CTNF within the CEA.

5.15.3 Past and Present Disturbances

Past and present impacts to resources include dams along the Snake River that have affected salmon runs and limited the availability of salmon for consumption. Development of open space, access restrictions, and land sales has reduced the amount and/or availability of unoccupied public lands for practicing Tribal Treaty Rights. Fire suppression, grazing, mining, and timber harvest have changed the vegetation and affected water quality. The Idaho National Laboratory restricts access to vast acreages of federal lands.

5.15.4 Foreseeable Future Disturbances

Reasonably foreseeable future disturbance on CNF lands within the CEA would likely include continuation of grazing, recreation, and timber sales. Mining and mining-related exploration proposed within the southeastern Idaho phosphate mining district would disturb approximately

4,690 acres, plus an additional unknown amount of disturbance resulting from the Dry Ridge exploration project (**Section 5.1.4**), of public lands. Mining at the Smoky Canyon Mine would continue until the permitted ore reserves are depleted. Under the Proposed Action or Alternative 1, approximately 170 additional acres (125 acres under Alternative 2) associated with the approved Panels F and G mining operations would be temporarily unavailable for Tribal Treaty Rights.

5.15.4.1 Tribal Exposure Scenario

At the request of the Shoshone-Bannock Tribes, a Tribal Exposure Scenario was prepared in the 2007 FEIS to analyze direct and indirect impacts on the traditional uses of the Project Area by tribal members. That scenario is detailed in Section 5.15 of the 2007 FEIS and not repeated here. The current Project Area was included in the 2007 scenario and the impacts would be similar for the current Proposed Action or Action Alternatives, but on a much smaller scale (170 or 125 acres of proposed disturbance) and with specific direct and indirect impacts to resources from the Project as described in **Chapter 4** of this EIS.

5.15.5 Cumulative Disturbances

As stated in the 2007 FEIS, the impacts to natural resources on unoccupied federal lands are slowly being reversed. Elk, moose, and deer numbers have increased. Federal and state agencies are enhancing native fish and wildlife habitat. In the shift towards ecosystem management, federal land managers have reintroduced more natural processes such as fire across the landscape. These efforts to improve the condition of natural resources collectively serve to protect and begin restoration of Tribal Treaty Rights.

Appropriate mitigation measures and EPMs such as reclamation, stormwater and sediment control, groundwater and surface water sampling/monitoring, etc. are required and implemented for ongoing and future mining projects which are protective of resources. These would continue.

5.15.6 Cumulative Effects

As described in **Section 4.15**, the EIS can generally assign a quantification (context, duration, and intensity), as required by CEQ, to the impacts to resources such as wildlife or water quality. However, it is difficult to quantify the impact of a temporary loss of a right. Consultation that has occurred to date with the Shoshone-Bannock Tribes is described in **Section 1.6**. During consultations for both the 2007 FEIS and this EIS, the Shoshone-Bannock Tribes stated that any loss of Tribal Treaty Rights is significant to them and could potentially affect all tribal members.

5.16 TRANSPORTATION

The Proposed Action or Action Alternatives would have no additional impacts to transportation; therefore, the Project would not contribute to cumulative effects to transportation in the CEA.

5.17 SOCIAL AND ECONOMIC CONDITIONS

5.17.1 CEA Boundary

The CEA boundary for socioeconomics, and the rationale for it, is the same as that described in Section 5.17 of the 2007 FEIS. It includes Lincoln County, Wyoming; and Bannock, Bear Lake, Bingham, Caribou, and Power counties in Idaho.

5.17.2 Introduction

The social and economic structures and relationships in the CEA in support of mining and other activities are described in Section 3.16 of the 2007 FEIS and **Section 3.17** of this EIS. Those sections also detail the local mine-related employment and activity.

The phosphate mines in the CEA produce feedstock for three phosphoric acid fertilizer plants: Simplot's Don Plant at Pocatello, Agrium's facility at Conda, and Monsanto's elemental phosphorus plant at Soda Springs. All the operations except the Don Plant are located in Caribou County.

5.17.3 Past and Present Disturbances

The past and present disturbance as related to phosphate mining and the socioeconomics of the area is discussed in detail in Section 3.16 of the 2007 FEIS. The financial crisis of 2008 was triggered by the bursting of the real estate bubble and led to world-wide recession. This recession was the third longest in the U.S. since World War II (Encyclopedia Britannica 2013). During this recession the dairy industry in Idaho experienced a severe collapse in milk prices in 2009, when dairy producers saw the price of milk reduce by 35 percent. Dairies in Idaho froze salaries and hourly rates, eliminated positions, reduced hours, asked employees to work more hours for the same amount of money, or asked employees to work the same amount of hours for less money. Dairy producers in Idaho estimated it would take from six months to five years to eliminate the debt they accumulated during the crisis (Western Dairy News 2010). In the midst of the recession in 2010, foreclosures in Idaho increased 124 percent over the number in 2008 (State of Idaho 2011). While unemployment rose in the CEA during the course of the recession, Caribou County generally has had lower unemployment than the rest of Idaho and the nationwide average, a trend that has continued through the recession until just recently (National Public Radio 2013). No information could be found about any impact of the financial crisis or the resulting recession on phosphate mining in Idaho.

5.17.4 Foreseeable Future Disturbances

No major changes to population, housing, employment, or private and public income would occur as a result of the Proposed Action or Action Alternatives. Continued phosphate mining would result in future private and public income at levels approximately the same as past and present conditions. Other incoming industry or developments proposed in the CEA or large scale economic issues (like the financial crisis of 2008) would be more likely to affect socioeconomics; the Proposed Action or Action Alternatives is a continuation of the current industry.

At least four new phosphate mines have been proposed within the CEA. These include the Dairy Syncline Mine (approximately 2,142 acres), the Rasmussen Valley Mine (approximately 420

acres), the Husky/North Dry Ridge Mine (approximately 1,051 acres), and the East Smoky Project (approximately 847 acres). Phosphate exploration drilling has also been proposed outside of those mines including Dry Ridge, Trail Creek Caldwell Canyon, and Freeman Ridge/Husky 2. These proposed exploration projects would result in additional future disturbance within the CEA and could lead to future additional mine development.

Although not likely based upon past evidence as described in **Section 5.1.3**, future oil/gas exploration and possibly production could occur in the CEA at some point in the future. Minor gold prospecting activities are expected to continue but the development of hard-rock mineral or metals mines in the CEA is unlikely.

5.17.5 Cumulative Disturbance and Cumulative Effects

The additional present and future phosphate mining and exploration projects described in the previous section would add to the continued relative economic stability within the CEA. Development of the new mines would be expected to at least maintain current economic drivers, should new mines replace completed mining projects. Because the Proposed Action or Action Alternatives would be a continuation of existing mining at the Smoky Canyon Mine, implementation of the Proposed Action or Action Alternatives would not contribute effects on socioeconomics beyond existing levels.

5.18 ENVIRONMENTAL JUSTICE

The Proposed Action or Action Alternatives would have no additional impacts to environmental justice; the Project would not cause disproportionately high and adverse effects on any minority or low-income populations (**Section 4.18**). (Potential cumulative effects to Treaty Rights are fully described in **Section 5.15**.) Therefore, the Proposed Action or Action Alternatives would not contribute to cumulative effects to environmental justice.